

**Vectron International****Filter specification****TFS 2535****1/5****Measurement condition**

Ambient temperature:	23	°C
Input power level:	0.	dBm
Terminating impedance: *		
Input:	27,22 Ω    -0,33 pF	
Output:	27,22 Ω    -0,33 pF	

**Characteristics**

## Remark:

The maximum attenuation in the pass band is defined as the insertion loss  $a_{\theta}$ . The nominal frequency  $f_N$  is fixed at 2535 MHz without any tolerance or limit. The values of absolute attenuation  $a_{abs}$  are guaranteed for the whole operating temperature range. The frequency shift of the filter in the operating temperature range is included in the production tolerance scheme.

<b>D a t a</b>		<b>typ. value</b>	<b>tolerance / limit</b>
<b>Insertion loss</b>	$a_{max}$	2,9 dB	max. 3,5 dB
<b>Nominal frequency</b>	$f_N$	-	2535,0 MHz
<b>Passband</b>	PB	-	$f_N \pm 33,0$ MHz
<b>Pass band ripple</b>	in an arbitrary 1,25 MHz segment within PB	0,05 dB	max. 0,5 dB
<b>Absolute attenuation</b>	$a_{abs}$		
0,3 MHz ... 1920 MHz		33	min. 25 dB
1920 MHz ... 2440 MHz		20	min. 10 dB
2624 MHz ... 2690 MHz		37	min. 35 dB
2690 MHz ... 3250 MHz		29	min. 25 dB
3250 MHz ... 5132 MHz		11	min. 5 dB
<b>VSWR within PB</b>		1,6 : 1	max. 1,9 : 1
<b>Input power level within PB</b>		-	max. 5 dBm
<b>Operating temperature range</b>	OTR	-	- 30 °C ... + 85 °C
<b>Storage temperature range</b>		-	- 40 °C ... + 85 °C
<b>Temperature coefficient of frequency</b>	$TC_f^{**}$	-44 ppm/K	-

\*) The terminating impedances depend on parasitics and q-values of matching elements and the board used, and are to be understood as reference values only. Should there be additional questions do not hesitate to ask for an application note or contact our design team.

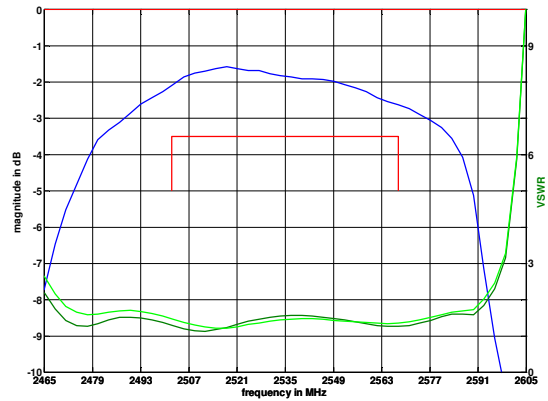
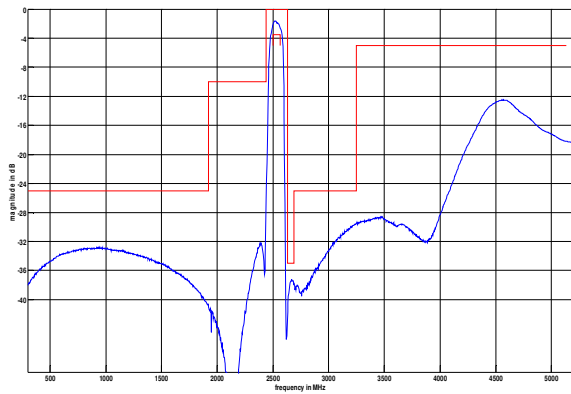
\*\*\*)  $\Delta f(\text{Hz}) = TC_f(\text{ppm/K}) \times (T - T_0) \times f_{T0}(\text{MHz})$ .

**Generated:****Checked / Approved:**

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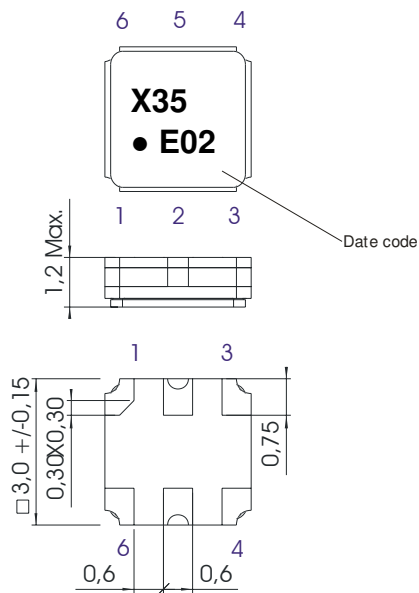
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Filter characteristic



Construction and pin connection

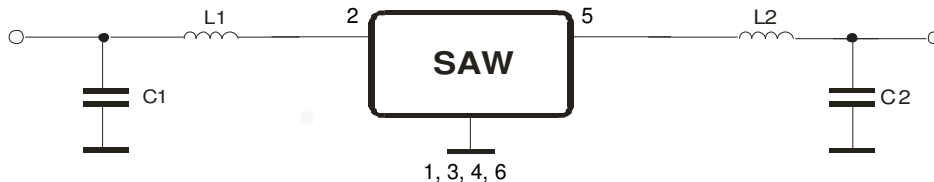
(All dimensions in mm)



- 1 Ground
- 2 Input
- 3 Ground
- 4 Ground
- 5 Output
- 6 Ground

Date code: Year + week  
 E 2014  
 F 2015  
 G 2016  
 ...

50 Ω Test circuit



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**Stability characteristics, reliability**

After the following tests the filter shall meet the whole specification:

- 1. Shock: 500g, 1 ms, half sine wave, 3 shocks each plane;  
DIN IEC 68 T2 - 27
- 2. Vibration: 10 Hz to 500 Hz, 0.35 mm or g respectively, 1 octave per min, 10 cycles per plane, 3 planes; DIN IEC 68 T2 - 6
- 3. Change of temperature: -55 °C to 125°C / 15 min. each / 100 cycles  
DIN IEC 68 part 2 – 14 Test N
- 4. Resistance to solder heat (reflow): reflow possible: three times max.;  
for temperature conditions, see page 4: "Air reflow temperature conditions"

This filter is RoHS compliant (2011/65/EU)

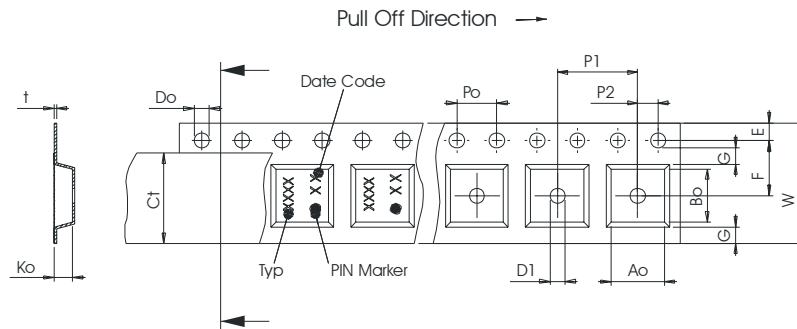
**Packing**

Tape & Reel: IEC 286 – 3, with exception of value for N and minimum bending radius;  
tape type II, embossed carrier tape with top cover tape on the upper side;

max. pieces of filters peer reel: 9000  
reel of empty components at start: min. 300 mm  
reel of empty components at start including leader: min. 500 mm  
trailer: min. 300 mm

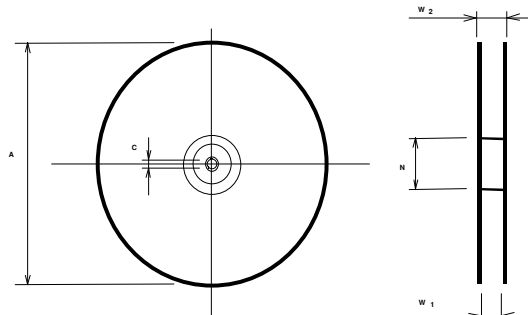
**Tape (all dimensions in mm)**

- W : 8,00 ± 0,3
- Po : 4,00 ± 0,1
- Do : 1,50 +0,1/-0
- E : 1,75 ± 0,1
- F : 3,50 ± 0,05
- G(min) : 0,75
- P2 : 2,00 ± 0,05
- P1 : 4,00 ± 0,1
- D1(min) : 1,50
- Ao : 3,25 ± 0,1
- Bo : 3,25 ± 0,1
- Ct : 5,5 ± 0,1



**Reel (all dimensions in mm)**

- A : 330
- W1 : 8,4 +1,5/-0
- W2(max) : 14,4
- N(min) : 50
- C : 13,0 +0,5/-0,2



The minimum bending radius is 45 mm.

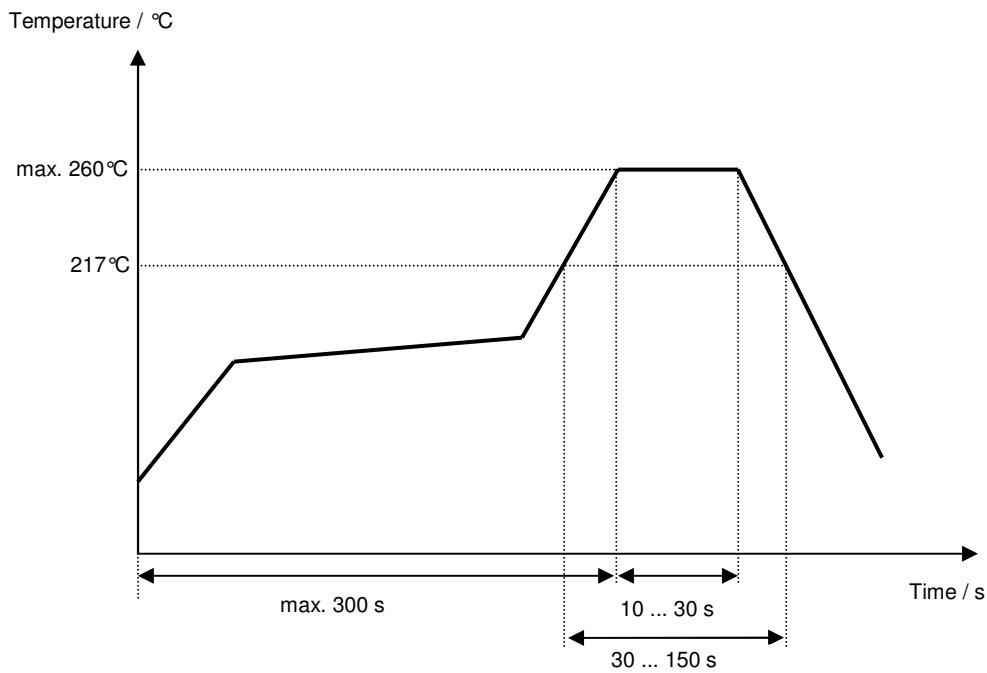
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**Air reflow temperature conditions**

<b>Conditions</b>	<b>Exposure</b>
Average ramp-up rate (30°C to 217°C)	less than 3°C/second
> 100°C	between 300 and 600 seconds
> 150°C	between 240 and 500 seconds
> 217°C	between 30 and 150 seconds
Peak temperature	max. 260°C
Time within 5°C of actual peak temperature	between 10 and 30 seconds
Cool-down rate (Peak to 50°C)	less than 6°C/second
Time from 30°C to Peak temperature	no greater than 300 seconds

**Chip-mount air reflow profile**



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**History :**

<b>Version</b>	<b>Reason of changes</b>	<b>Name</b>	<b>Date</b>
1.0	- Generation of development specification	Strehl	06.09.2004
1.1	- Add typical values, impedances, filter characteristic and test circuit - Generation of filter specification	Strehl	24.06.2005
1.2	- Change filter characteristic	Channaa	25.10.2005
2.0	- Change of temperature coefficient, typical values, power level and Relaxation at the outer stop band limits @3250MHz...5132MHz	S.Springfeldt	23.04.2010
2.1	- Maximum input power updated	Kortenbeutel	07.01.2014